

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

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In the Matter of

THE IMPLEMENTATION OF KENTUCKY'S)	
COMMERCIAL AND APARTMENT CONSERVA-)	
TION SERVICE PLAN PURSUANT TO)	ADMINISTRATIVE
TITLE VII OF THE NATIONAL ENERGY)	CASE NO. 278
CONSERVATION POLICY ACT OF 1978)	
1. KENTUCKY POWER COMPANY)	
2. KENTUCKY UTILITIES COMPANY)	
3. LOUISVILLE GAS AND ELECTRIC)	
COMPANY)	
4. THE UNION LIGHT, HEAT AND)	
POWER COMPANY)	
5. GREEN RIVER ELECTRIC CORPORATION))	
6. HENDERSON-UNION R.E.C.C.)	
7. COLUMBIA GAS OF KENTUCKY, INC.)	
8. WESTERN KENTUCKY GAS COMPANY)	

O R D E R

On October 14, 1978, Congress enacted the National Energy Conservation Policy Act ("NECPA"), PL 95-619, which provides for the development, by individual states, of commercial and apartment conservation plans to be implemented by certain utilities operating within those states. Congress determined that the conservation of energy is in the national interest and that a unified effort to conserve our energy resources will lessen the dependence of the United States on foreign oil. The purpose of the program is to encourage the installation of energy conservation measures, including renewable resource measures, in existing commercial establishments and apartment buildings.

NECPA and the United States Department of Energy ("USDOE") regulations provide an exact methodology for state compliance. That methodology is the approval by USDOE of a Commercial and Apartment Conservation Service Plan ("CACS") for an individual state. The Commission has been designated the lead agency to develop and submit the CACS Plan and has developed such plan (attached hereto as Appendix A).

The Commission, having considered the matter and being advised, HEREBY ORDERS that a hearing be and it hereby is scheduled on July 11, 1984, at 9:00 a.m., Eastern Daylight Time, in the Commission's offices at Frankfort, Kentucky, for the purpose of receiving comment and testimony with respect to the proposed Commercial and Apartment Conservation Service Plan.

Done at Frankfort, Kentucky, this 12th day of June, 1984.

PUBLIC SERVICE COMMISSION


For the Commission

ATTEST:

Secretary

APPENDIX A

Commercial and Apartment Conservation Service Plan

Commonwealth of Kentucky

May 23, 1984

Kentucky Public Service Commission

730 Schenkel Lane

Frankfort, Kentucky 40601

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1.01 PROGRAM OBJECTIVES AND SCOPE OF BENEFITS

This Plan establishes requirements for the Commercial and Apartment Conservation Service (CACS) Program for the Commonwealth of Kentucky and is fully responsive to the requirements for the CACS Programs published by the Department of Energy in the Federal Register on October 26, 1983 (48 FR 49622; 10 CFR 458.101-314). This Plan was prepared by the Kentucky Public Service Commission (PSC), which is the agency designated by the Governor of the Commonwealth to prepare and submit the CACS Plan for Kentucky. Questions about this Plan should be directed to the Kentucky PSC.

This program assures that customers of covered utilities will be provided with appropriate energy conservation information and will be offered an energy audit of their business or apartment building.

1.02 COVERAGE OF STATE PLAN

All regulated utilities providing utility service within the Commonwealth which meet the definition of "covered utility" are subject to this Plan. The term "covered utility" means, in any calendar year, a public utility which during the second preceding calendar year had either:

- (a) Sales exceeding 10 billion cubic feet of natural gas for purposes other than resale; or
- (b) Sales exceeding 750 million kilowatt-hours of electric energy for purposes other than resale.

The following regulated utilities fall within this definition and are covered by this Plan:

Gas Utilities

Columbia Gas of Kentucky, Inc.

Louisville Gas and Electric Company

Union Light, Heat and Power Company

Western Kentucky Gas Company

Electric Utilities

Kentucky Power Company

Kentucky Utilities Company

Louisville Gas and Electric Company

Union Light, Heat and Power Company

Rural Electric Cooperatives

Green River Electric Corporation

Henderson-Union Rural Electric Cooperative Corp.

Building heating suppliers, as defined in 10 CFR 458.102, are not included in the State Plan.

Any other utilities jurisdictional to the PSC who wish to participate in this program shall also be referred to as covered utilities for purposes of this program.

A utility need not offer audits to all commercial and apartment buildings if the PSC determines, within 6 months of the effective date of the Federal CACS Rule (Chapter II Title 10 Code of Federal Register, Part 458), that inclusion of commercial or apartment buildings would significantly impair the utility's ability to:

- (a) fulfill the requirements of RCS; or
 - (b) provide utility service to its customers.
-

1.03 DEFINITIONS

Definitions for terms relating to this program and used in this Plan are found in Appendix A and are the same as those contained in Section 458.102 of the CACS rules published in the Federal Register Vol. 48, No 208 on October 26, 1983.

1.04 COMPLIANCE PROCEDURES

All covered utilities are required to comply with the Kentucky Commercial and Apartment Conservation Service Plan. Each covered utility shall submit for approval by the Kentucky Public Service Commission its written description for complying with the State Plan within 60 days after its issuance. Utilities may change or modify plans subject to PSC approval. Thereafter, the PSC will monitor program implementation by auditing utility activities and reviewing annual reports provided by the utilities as set forth in Section 1.14; Reports and Recordkeeping. If compliance problems are identified as a result of either the utility audit or the review of annual reports, the PSC will work with the utility (utilities) in an effort to bring about compliance. If this effort fails, the PSC will implement the procedures outlined in Chapter 278 of the Kentucky Revised Statutes to insure compliance. Non-compliance with the State Plan by any utility may result in non-recovery by the utility of some or all CACS program cost allowances (as determined by PSC) through rate adjustment during

the period of non-compliance. Non-compliance may further result in the return of the customer's charge for the audit.

1.05 AUDIT ANNOUNCEMENT

An announcement of the CACS Program shall be provided to each eligible customer no later than 12 months after approval of this Plan and at least once every two years thereafter until January 1, 1990.

This Program announcement shall include but not necessarily be limited to the following:

- (a) A description of the services offered;
- (b) An explanation of how the eligible customer may request a program audit; and
- (c) The cost of the program audit to the customer.

It is recommended that program announcements also include a description of the benefits which could be derived by the customer through the completion of a CACS audit.

The information furnished in the announcement shall not unfairly discriminate nor be distributed in a manner that would unfairly discriminate against any measure or eligible customer. The announcement may contain the stipulation that an eligible customer should, upon receipt of an offer to audit, request his or her audit from the covered utility which provides the primary heating fuel or energy source if such customer is served by more than one covered utility.

Information which shall not be included in any audit announcement distributed as part of this program includes:

- (a) Advertisement for the sale, installation or financing of any energy conserving product; and
- (b) Information relating to products that are not program measures or energy conserving operation or maintenance procedures.

In order to ensure compliance with the announcement provisions of this Plan, each covered utility shall submit to the PSC for approval, within 60 days of receipt of Commission Order to comply with the CACS Plan, a proposed schedule for the distribution of audit announcements and for responding to audit requests. The PSC shall review the proposed schedules and shall, within one month of receipt, notify the covered utility of its approval or recommendations for changes in that schedule. Further, each covered utility shall submit to the PSC for approval a copy of each audit announcement form. The PSC shall review the proposed announcements and shall notify the covered utilities of its approval prior to the printing and distribution of the audit announcements.

1.06 PROGRAM AUDITS

Each utility included in this Plan shall provide, upon request, to each eligible customer an on-site Program audit which addresses only applicable Program measures approved by this Plan. The auditor will present calculated purchase and/or installation costs and resulting energy savings for all Program measures except caulking and weatherstripping. For load reducing measures (which include envelope improvements), the savings will be based on standard heat

loss/heat gain algorithms. Refer to: "ASHRAE Handbook of Fundamentals, 1981," Chapter 23). For heating/cooling plant modifications, the savings will be based on state of the art efficiency measurement, such as annual fuel use efficiency (AFUE), or energy efficiency ratings (EER).

The program audit format is to be designed by the utility. The format must include all program measures and operation and maintenance procedures and must be performed by a qualified auditor.

The program audit need not address a Program measure if the building to be audited does not meet criteria for the measures listed in Appendix B of this Plan.

The covered utility shall schedule a program audit for each eligible customer within thirty (30) days of utility receipt of the customer's payment. However, the audit shall be performed in a timely manner but must be done within sixty (60) days after payment. So that utilities may better control travel costs in providing audits, the scheduling of audits may be based on the location of the audit site as it relates to other audit sites and need not be based on a "first come; first served" approach. Aside from the consideration of audit location mentioned above, all audit scheduling must be made on a non-discriminatory basis.

To determine the eligibility of a commercial building for a program audit on the basis of the on-site consumption of less than 100 million Btu of a fuel other than electricity or natural gas, the following conversion factors are to be used:

- Coal: 24.5 million Btu/short ton;
- Distillate Fuel Oil: 138,690 Btu/gallon

- LPG: 95,475 Btu/gallon;
- Purchased Steam: 1000 Btu/pound; and
- Residual Fuel Oil: 149,690 Btu/gallon.

All audited customers shall receive audit results in writing.

If audit report is not presented in person, the auditor shall provide a telephone number with the audit report which the customer can call to discuss the results. The audit report shall include the following information:

- (a) A report of the type, quantity and rate of energy consumption of the audited building;
- (b) Identification and explanation of the applicable energy conserving operation and maintenance procedures defined in 10 CFR 458.103 together with an indication to the extent feasible, of the energy savings to result from these practices;
- (c) A report on the need, if any, for the purchase and installation of the applicable program measures, defined in 10 CFR 458.307;
- (d) The approximate cost of purchasing and/or installing the applicable program measures using typical practice estimates based on local construction costs;
- (e) The simple payback for all recommended program measures (except caulking and weatherstripping) wherever feasible; and
- (f) An explanation of how to find more specific information on the purchase, financing and installation of program measures, and information on other commercially available audit services.

Each eligible apartment building customer must certify, as a condition for receiving a program audit of an apartment building, that the customer agrees to supply to the tenants within two weeks, after receipt of the audit results, information developed by the audit relating to operations and maintenance procedures and program measures which are applicable to an individual apartment.

All audit procedures will be validated to ensure accuracy. The covered utilities will compare the calculations to those contained in standard references such as the ASHRAE Handbook of Fundamentals. When such calculations do not exist in standard reference, they will review the calculations for accuracy. The utilities will also review all assumptions used in the cost/savings calculations to determine appropriateness and reasonableness.

In conjunction with the Program set forth in this Plan, auditors shall not recommend any supplier, contractor, or lender who supplies, installs or finances the sale or installation of any energy conserving product.

There shall be no unfair discrimination among Program measures in conjunction with the Program set forth in this Plan.

1.07 DUPLICATE AUDITS

Utilities shall not be required to conduct a Program audit of any commercial or apartment building which was audited previously pursuant to this Plan or which received an energy audit under the Federal Institutional Conservation Program. Utilities may co-

ordinate their efforts to avoid duplication of audits. If customers are served by more than one covered utility, the utility selected by the customer shall perform the audit.

1.08 PROGRAM MEASURES AND ENERGY CONSERVING OPERATION AND MAINTENANCE PROCEDURES

The Program measures and energy conserving operation and maintenance procedures to be addressed in program audits are those identified as program measures in 10 CFR 458.104. (See Appendix C.).

1.09 AUDITOR QUALIFICATION/TRAINING

The covered utility shall assure that each person performing audits is qualified and possesses sufficient training to perform the necessary measurements, calculations, costs and savings estimates and audit procedures. In general, auditors should possess:

- (a) A general understanding of commercial and apartment building construction; particularly, a knowledge of the heating and cooling systems, of heat transfer and related environmental effects, of the different types and applications of Program measures and of any relevant State installation standards.
- (b) The capability to determine the applicability of the Program measures and proficiency in pertinent auditing procedures for each applicable Program measure.
- (c) A general knowledge of the nature of solar energy and its applications.
- (d) A specific knowledge of utility rates.

- (e) A working ability to calculate or determine the steady state efficiency of a furnace or boiler.
- (f) A general knowledge of pneumatic, electrical and hydronic control systems and their applicability to automatic energy control systems.
- (g) An understanding of the inter-relationship between the various loads in the eligible building population including the ability to anticipate the corresponding effect on one load of changes to the other;
- (h) A general knowledge of lamps and lighting systems used in commercial and multifamily buildings.
- (i) A general knowledge of the functions and operating characteristics of steam systems in commercial and apartment buildings as well as the various types and symptoms of steam system failure; and
- (j) An understanding of automatic energy control systems and the living habits of the occupants, the structure and the mechanical and lighting systems (energized systems).

It shall be the utilities responsibility to provide evidence of auditor qualifications to the PSC.

1.10 SUBSEQUENT CUSTOMERS

The covered utility shall retain in its file for not less than 10 years from the date of a program audit a report of each program audit performed pursuant to the CACS Program. Each subsequent customer shall be informed of the fact that a covered utility may have previously audited his/her building under the CACS

program. The utility may use the regular audit announcement to carry out this notification. Additionally, the utility shall make the previous audit report available to the subsequent customer at no cost.

A covered utility may perform a new audit of a building which was previously audited under the CACS Program, instead of providing the report described above if the customer agrees. In such instances, the customer must have been informed of both the availability of the previous audit report and the cost of a new audit.

1.11 ACCOUNTING AND PAYMENT OF COST

All amounts expended or received by a covered utility which are attributable to the CACS Program, including any penalties paid under Federal Standby Authority, shall be accounted for on the books and records of the utility separately from amounts attributable to all other activities of the covered utility. All amounts expended by a covered utility in providing the audit announcement and in disseminating information about the CACS Program shall be treated as a current expense of providing utility service and be charged to all ratepayers of the covered utility in the same manner as other current operating expenses of providing such utility service.

Each covered utility will charge customers directly for audits according to the following fee scale:

Apartment Building: \$15.00/audited unit or actual cost
whichever is lower

Commercial Building: \$100.00 or actual cost whichever is lower.

All amounts expended by a covered utility in providing audits and audit reports above and beyond those amounts recovered from customers directly shall be treated as a current expense of providing utility service and shall be charged to all ratepayers of the covered utility in the same manner as other current expenses of providing such utility services.

1.12 CUSTOMER BILLING

Every charge by a covered utility to an eligible customer for any portion of the costs of carrying out a program audit pursuant to this Plan, that is charged to the customer for whom the program audit is performed and that is included on a bill for utility service submitted by the utility to the customer, shall be stated separately from all other utility itemized costs on such bill.

1.13 COORDINATION

The PSC shall, to the extent possible, coordinate the procedures and implementation of this State Plan with all other State, local and federal conservation programs.

1.14 REPORTS AND RECORDKEEPING

The Public Service Commission shall provide to the Assistant Secretary of the Department of Energy by July 1, following State Plan approval, and annually thereafter through July 1 of 1990, a report of the CACS program activities within the Commonwealth of Kentucky for the 12-month period ending the preceding April 1.

This report shall include:

- (a) The number and nature of program audits requested from and provided by each utility for commercial buildings and apartments separately.**
- (b) The estimated State costs and each utility's cost of implementing the CACS Program.**
- (c) The number of eligible customers, if known, and**
- (d) Copies of the latest audit announcements, if not previously provided.**

To assist the PSC in monitoring Program implementation, all covered utilities shall provide to the Commission by May 15, 1985, and every May 15 thereafter, a report containing the information outlined above for the 12-month period ending the preceding April 1. To insure retention of CACS Program information, each covered utility shall retain on file a copy of the report of results of each Program audit for 10 years from the date of the audit.

APPENDIX A

Definitions.

1. **Apartment Building.** The term--"Apartment Building" means a building which is used for residential occupancy, was completed on or before June 30, 1980, contains five or more apartments and uses any of the following: a central heating system; a central cooling system; or a central meter for the heating or cooling system.
2. **Assistant Secretary.** The term "Assistant Secretary" means the Assistant Secretary for Conservation and Renewable Energy for the U.S. Department of Energy.
3. **Audit Announcement.** The term "Audit Announcement" means the offer of an audit which \$458.304 requires a covered utility or covered building heating supplier to provide to each eligible customer.
4. **Building.** The term "building" means any space which has permanent walls with no openings connecting the space to any adjacent conditioned space, is separately heated and cooled, and has its own meter(s).
5. **Building Heating Supplier.** The term "Building Heating Supplier" means any person engaged in the business of selling No. 2, No. 4, or No. 6 heating oil, kerosene, or propane to eligible customers.
6. **Commercial and Apartment Conservation Service Program.** The term "Commercial and Apartment Conservation Service (CACS) Program" means the audit program which this plan requires each covered utility and covered building heating supplier to implement pursuant to an approved State Plan, an approved Nonregulated Utility Plan, or a Federal Standby Plan.
7. **Commercial Building.** The term "Commercial Building" means a building--
 - (a) Which was completed on or before June 30, 1980;
 - (b) Which is used primarily for carrying out a business (including a nonprofit business) or for carrying out the activities of a State or local government;
 - (c) Which is not used primarily for the manufacture or production of products, raw materials, or agricultural commodities;
 - (d) Which is not a Federal building;

(e) For which the average monthly use of energy for calendar year 1980 (or the latest twelve month period for which information is readily available) was less than the following:

(i) 4,000 kilowatthours of electricity, unless it is determined that the building exceeds the average monthly fuel prescribed in either paragraph (e)(2) or (3) of this definition;

(ii) 1,000 terms of natural gas, unless it is determined that the building exceeds the average monthly fuel use prescribed in either paragraphs (e)(1) or (3) of this definition; and

(iii) 100 million Btu of any other fuel, unless it is determined that the commercial building exceeds the average monthly fuel use prescribed in paragraphs (e)(1) and (2) of this definition.

(f) For purposes of determining the consumption limits in paragraph (e) of this definition, all exterior devices which are connected to the same meter as the building may be considered part of the building.

8. Covered Building Heating Supplier. The term "Covered Building Heating Supplier" means a building heating supplier included in a State Plan.

9. Covered Utility. The term "Covered Utility" means in any calendar year a public utility (regulated or nonregulated) which during the second preceding calendar year had either--

(a) Sales of natural gas for purposes other than resale which exceeded 10 billion cubic feet; or

(b) Sales of electric energy for purposes other than resale which exceeded 750 million kilowatthours.

10. DOE. The term "DOE" means the United States Department of Energy.

11. Eligible Customer. The term "Eligible Customer" means any of the following:

(a) With respect to a covered utility, the owner or tenant of a commercial building or the owner (or the owner's agent) of an apartment building to whom the covered utility sells electricity or natural gas, for use in the building and who is the utility customer of record; or

(b) With respect to a building heating supplier, the owner or tenant of a commercial building or the owner (or the

owner's agent) of an apartment building to whom the building heating supplier sells No. 2, No. 4 or No. 6 heating oil, kerosene, or propane for use in the building and who is the supplier's customer of record.

12. **Federal Building.** The term "Federal Building" means any building or other structure owned in whole or part by the Government of the United States or a Federal agency, including any structure occupied by a Federal agency under a lease-acquisition agreement under which the United States or a Federal agency will receive fee simple title under the terms of the agreement without further negotiations.
13. **Governor.** The term "Governor" means the Governor or chief executive officer of a State or the Governor's designee.
14. **Lead Agency.** The term "Lead Agency" means a State agency authorized by law or designated by the Governor to develop and submit a State Plan.
15. **NECPA.** The term "NECPA" means the National Energy Conservation Policy Act, Pub. L. 95-619.
16. **Nonregulated Utility.** The term "Nonregulated Utility" means a public utility which is not a regulated utility.
17. **Nonregulated Utility Plan.** The term "Nonregulated Utility Plan" means a plan developed pursuant to Subpart D of the Federal Register Part 458.
18. **Program Audit.** The term "Program Audit" means an on site inspection of a commercial building or an apartment building carried out in accordance with the requirements of §458.305.
19. **Program Information.** The term "Program Information" means the audit announcement and any information dissemination activities related to a CACS Program.
20. **Public Utility.** The term "Public Utility" means any person, State agency, or Federal agency which is engaged in the business of selling natural gas or electric energy, or both, for use in commercial buildings or apartment buildings.
21. **Rate.** The term "Rate" means any price, rate, charge, or classification made, demanded, observed, or received with respect to sales of electric energy or natural gas, any rule, regulation, or practice respecting any rate, charge or classification, and any contract pertaining to the sales of electric energy or natural gas.
22. **Ratemaking Authority.** The term "Ratemaking Authority" means authority to fix, modify, approve, or disapprove rates.

23. **Regulated Utility.** The term "Regulated Utility" means a public utility with respect to whose rates a State regulatory authority has ratemaking authority.
24. **Secretary.** The term "Secretary" means the Secretary of Energy.
25. **State.** The term "State" means a State, the District of Columbia, and Puerto Rico.
26. **State Agency.** The term "State Agency" means a plan developed pursuant to Subpart C of the Federal Register Part 458.
27. **State Regulatory Authority.** The term "State Regulatory Authority" means any State agency which has ratemaking authority with respect to the sales of electric energy or natural gas by any public utility (other than by such State agency), except that in the case of a public utility with respect to which the Tennessee Valley Authority has ratemaking authority, such term means the Tennessee Valley Authority.
28. **TVA.** The term "TVA" means the Tennessee Valley Authority.

APPENDIX B

Program Measure Applicability Criteria.

1. A program measure is applicable in a building if:
 - (a) The measure is not already present in good condition and the potential exists to save energy and/or reduce energy demand in the building by installing it. A replacement measure is applicable only if a less efficient device performing the same function, which is more than 5 years old, is already present in the building.
 - (b) Installation of the measure is not a violation of Federal, State or local law or regulations.
2. Energy recovery systems (when waste heat from an air conditioner is used to assist in heating water) are applicable if:
 - (a) The building uses at least 50 gallons of hot water per day;
 - (b) The building has a source of waste heat of 3400-5800 Btu/hour (e.g. the equivalent of waste heat from a two-ton air conditioner; and
 - (c) The building is located in an area with more than 2000 cooling degree days.
3. Furnace flue opening modifications are applicable if the furnace combustion air is taken from a conditioned area.
4. Ceiling insulation is applicable if the differential between the existing insulation and a level equivalent to R-30 exceeds R-11.
5. Lighting system modification to use daylighting is applicable if any electric lighting fixtures are located within 15 feet of an existing window or skylight in a commercial building or in common areas of an apartment building.
6. Passive solar heating thermosyphon air systems are applicable if the building has a south-facing (+45° of true south) wall free of a major obstruction to sunshine during the heating season.
7. Solar domestic hot water systems are applicable if the building consumes more than 80 gallons of hot water per day and has access to a site clear of major obstructions to solar radiation which allows solar collectors to be oriented +45° of true south.

- (i) The term "Replacement Burner (Oil)" means a device which atomizes the fuel oil, mixes it with air, and ignites the fuel-air mixture; is an integral part of an oil-fired furnace or boiler (including the combustion chamber); and which, because of its design, achieves a reduction in the oil used from the amount of oil used by the device which it replaces.
- (ii) The term "Replacement Burner (Gas)" means a device designed for installation in an existing gas-fired boiler which uses fan and control mechanisms to supply and control combustion air to achieve an optimal fuel to air ratio for maximum gas combustion efficiency and which, because of its design, achieves a reduction in the gas used from the amount of gas used by the device which it replaces.
- (d) "Replacement Furnace or Boiler" which means a furnace or boiler, including a heat pump, which replaces an existing furnace or boiler of the same fuel type and provides reduced fuel consumption due to higher energy efficiency of the heating system.
- (e) "Distribution System Modifications" which means modifications to an energy distribution system and associated components that increase the energy efficiency, such as--
 - (i) Improved flow control devices;
 - (ii) Improved pipe or duct routing to reduce pressure drop and/or heat losses;
 - (iii) Flow balancing mechanisms; or
 - (iv) Point of use water heaters of the same fuel type.
- 6. "Insulation" which means installation within a building or apartment of a material primarily designed to resist heat transmission in one of the following ways:
 - (a) "Ceiling Insulation" installed between the conditioned area of a building and unconditioned space beneath the roof. When the conditioned area of a building extends to the roof, the term "ceiling insulation" applies to such material used beneath the roof. Ceiling insulation also includes such material used on the exterior of the roof.
 - (b) "Duct Insulation" installed on heating or cooling supply and return ducts in an unconditioned area of a building such as the space above a dropped ceiling.

- (c) "Floor Insulation" installed between the lowest conditioned level of a building and a lower unconditioned level. For a structure with an open crawl space, the term "floor insulation" also means skirting to enclose the space between the building and the ground.
 - (d) "Pipe Insulation" installed on--
 - (i) Pipes and fittings carrying hot or cold fluids for space conditioning purposes; or
 - (ii) Hot water pipes and fittings with continuous recirculating systems.
 - (e) "Wall Insulation" installed within or on exterior walls or walls between conditioned and unconditioned areas of a building.
 - (f) "Water Heater Insulation" wrapped around the exterior surface of the water heater casing.
7. "Lighting Systems Replacement or Modification" which means devices and actions which reduce overall lighting energy consumption and/or demand while maintaining satisfactory lighting levels. These devices and actions include:
- (a) Reducing light levels to levels cited in existing applicable guidelines in each area of the building. This action may include installation of task lighting and reduction of overhead task lighting;
 - (b) Controlling lamp operating time to limit lighting operation to periods of area use. Installation of local manual switching, time control devices and space use sensing devices is included;
 - (c) Replacement of lamps with more efficient sources. These devices and actions may include, but are not limited to, replacement of incandescent and fluorescent lighting with lumen-equivalent low energy lamps, replacement of old fluorescent lighting ballasts with new electronic ballasts, or replacement of any fixture type with one of greater lumens per watt efficiency such that total lighting demand can be reduced; and
 - (d) Use of "Daylighting" by automatically switching off electric lights in areas where satisfactory lighting levels can be maintained using either existing windows or skylights in a commercial building or a common area of an apartment building.

8. "Passive Solar Space Heating and Cooling Systems" which means systems that make the most efficient use of, or enhance the use of natural forces--including solar irradiation, winds, night time coolness, and the opportunity to lose heat by irradiation to the night sky--to heat or cool space by the use of conductive, convective, or radiant energy transfer.

"Passive solar systems" include but are not limited to:

- (a) "Thermosyphon Air System" which means a solar day time heater attached to the south-facing (+45° of true south) wall of a building which operates either through natural convection or through use of a fan of low power to draw air from near the floor, exposes the air to a solar-heated surface, and discharges heated air near the ceiling, and which is able to be closed off from the conditioned area at night and on cloudy days.
 - (b) "Solaria/Sunspace System" which means an enclosed structure of glass, fiberglass, or similar transparent material attached to the south-facing (+45° of true south) wall of a structure which absorbs solar heat and utilizes air circulation to bring this heat into the building and which is able to be closed off from the structure at night and on cloudy days.
9. "Solar Domestic Hot Water Systems" which means equipment designed to absorb the sun's energy and to use this energy to heat water for use in a structure other than for space heating, including solar thermosyphon hot water heaters.
10. "Solar Replacement Swimming Pool Heater" which means a device used solely for the purpose of using the sun's energy to heat swimming pool water and which replaces a swimming pool heater using electricity, gas, or other fossil fuel.
11. "Weatherstripping" which means narrow strips of material placed over or in movable joints or windows and doors to reduce the passage of air and moisture.
12. "Window and Door System Modifications" which include the measures defined as follows:
- (a) "Storm Window" which means a window or glazing material placed outside or inside a prime window, creating an insulating air space, to provide greater resistance to heat flow than the prime window alone.
 - (b) "Thermal Window" which means a window unit with improved thermal performance through the use of two or more sheets of glazing materials affixed to a window frame to create one or more insulated air spaces. It may also have an insulating frame and sash.

(c) "Storm or Thermal Door" which means--

- (i) A second door, installed outside or inside a prime door, creating an insulating air space;
- (ii) A door with enhanced resistance to heat flow through the glass area, constructed by affixing two or more sheets of glazing material.
- (iii) A prime exterior door with an R-value of at least 2; or
- (iv) A door that is designed to minimize air exchange during operation, including revolving doors, and double doors with a foyer.

(d) "Glazing Heat Gain/Loss Retardants" which means those fixtures such as insulated shades, drapes, or movable rigid insulation, awnings, external rollup shades, metal or fiberglass solar screening, or heat absorbing films which significantly reduce winter heat loss and heat reflective films which significantly reduce summer heat gain through windows and doors.

APPENDIX C

CACS Program Measures Applicable to Kentucky

1. "Air Conditioner Replacement" which means an air conditioner which replaces an existing air conditioner of the same fuel type and which reduces the amount of fuel consumed due to an increase in efficiency.
2. "Automatic Energy Control System" which means devices and associated equipment which regulate the operation of heating, cooling or ventilating equipment based on time, inside and/or outside temperature or humidity, or utility load management considerations in order to reduce energy demand and/or consumption.
3. "Caulking" which means pliable materials used to reduce the passage of air and moisture by filling small gaps such as around window and door frames, around unsealed glass panes, at fixed joints on a building, underneath baseboards inside a building, at electrical outlets, around pipes and wires entering a building, and around dryer vents and exhaust fans. Caulking includes, but is not limited to, materials commonly known as "sealants," "putty," and "glazing compounds."
4. "Energy Recovery Systems" which means equipment designed primarily to recover building waste energy from sources such as refrigeration or air conditioning for some useful purpose such as heating water.
5. "Furnace, or Utility Plant and Distribution System Modifications" which means installation of the devices or components which are defined as follows:
 - (a) "Intermittent Pilot Ignition Device (IID)" which means a device which, when installed in a gas-fired furnace or boiler, automatically ignites the pilot or burner and replaces a continuously burning pilot light.
 - (b) "Flue Opening Modification (Vent Damper)" which means an automatically operated damper installed in a gas-fired or oil-fired furnace or boiler which--
 - (i) Is installed downstream from the draft hood or barometric damper; and
 - (ii) Conserves energy by substantially reducing the flow of heated air through the chimney when the furnace is not in operation.
 - (c) "Replacement Burner (Oil or Gas)"

8. Solaria/sunspace systems are applicable to an apartment building if it has existing balconies, patios or available adjacent ground area on the south-facing ($+45^\circ$ of true south) wall. Solaria/sunspace systems are not applicable to commercial buildings.
9. Solar swimming pool heater replacements are applicable only for apartment buildings and only if the pool uses electricity or other nonrenewable energy for heating.
10. Window heat gain retardants are applicable to buildings which have glass on the south, east or west sides if they are exposed to sunlight.
11. Pipe and duct insulation is applicable to hot water pipes and to heating and cooling ducts which extend through unconditioned spaces.